Journal of Non-Crystalline Solids 161 (1993) xi–xiv
North-Holland

Contents

Preface vii
Committees ix
Sponsors ix
Conference picture x
Contents xi

Section 1. Raw materials; purification; analysis; glass, preform and fabrication

Gas film levitation: a unique containerless technique for the preparation of fluoride glass rods
P. Baniel and C. Belouet 1
Hot isostatic pressing of fluoride glasses
B.B. Harbison and I.D. Aggarwal 7
Thermal and mass analyses of fluorination process with ammonium bifluoride
M. Onishi, T. Kohgo, K. Amemiya, K. Nakazato, H. Kanamori and H. Yokota 10
Plasma-enhanced chemical vapor deposition of ZrF_4-based fluoride glasses
K. Fujiura, Y. Nishida, H. Sato, S. Sugawara, K. Kobayashi, Y. Terunuma and S. Takahashi . . 14
OH absorption in the low loss window of ZBLAN(P) glass fibre
D. Szebesta, S.T. Davey, J.R. Williams and M.W. Moore 18
Physical vapour deposition of rare-earth fluorides
O. Perrot, B. Boulard and C. Jacoboni 23
Electrochemistry at a rotating disc electrode in heavy metal fluoride melts
Z. Zhou, P.J. Newman and D.R. MacFarlane 27
Fe, Co, Ni, Cu trace metal analysis in ZBLAN fluoride glasses
D. Bertrand, J. Guery and C. Jacoboni 32
Electroanalytical methods for transition metal analysis in heavy metal fluoride melts
Z. Zhou, P.J. Newman and D.R. MacFarlane 36

Section 2. Crystallization and defects analysis

Formation of scattering centres in fluoride glass preforms and fibres
A. Jha 41
Defect centers in heavy-metal fluoride glasses: a review
D.L. Griscom 45
Straie in fluoride glasses
G.F. West and R. Sen 52
Identification of crystalline phases found in multicomponent AlF_3-based glasses
A.V. Cardoso, P. Korgul and A.B. Seddon 56
Crystallization behaviour of fluorozirconate glasses
M. Baricco, L. Battezzati, M. Braglia, G. Cocito, J. Kraus and E. Modone 60

Influence of Ag on nucleation and crystallization of fluorozirconate glasses
I. Szabó and G.H. Frischat 66
Synthesis and microstructural studies of Er^{3+}-doped fluorozirconate devitrified glasses
P. Santa-Cruz, F. Auzel, A. Sadoc, J. Dexpert-Ghys, P. Henoc, D. Morin, S. Hubert and J. Grannec 70
The effect of rare earth ions on the thermal stability of AlF_3-based glasses
M.R. Shahriari, T. Iqbal, P. Hajcak and G.H. Sigel Jr. 77
Non-destructive optical inspection of evaporated fluoride glass layers
P.C. Montgomery, D. Montaner, C. Jacoboni, B. Boulard and J.P. Fillard 81

Section 3. Structure; glass formation; thermodynamics; vitreous systems

Thermodynamics of the ZBN glass-forming system
T. Grande, S. Aasland and S. Julsrud 86
Experimental thermodynamics and phase equilibria estimation in Zr-fluoride glasses
G. Hatem, M. Gaune-Escard and M. Hoch 91
A systematic survey of experimental and simulated glass formation for the ZrF_4–BaF_2–NaF system
A. Uhlherr and D.R. MacFarlane 98
Vibrational spectra and structure of fluoroindate glasses
R.M. Almeida, J.C. Pereira, Y. Messaddeq and M.A. Aegerter 105
Range of crystal field strength in various fluoride glasses
F. Auzel, J. Chavignon, D. Meichenin and M. Poulain 109
EPR structural investigations of transition metal fluoride glasses (TMFG)
C. Legein, J.Y. Buzaré and C. Jacoboni 112
Computer simulation of the vibrational spectra and properties of fluoride glasses based on ZrF_4
H. Inoue and A. Makishima 118
Structural study of fluorozirconates recrystallizing from fluoride glasses ($LnZr_2F_{11}$, $BaNaZr_2F_{11}$, $\beta BaZr_2F_{10}$): a key for glass structure models
J.P. Laval 123

Section 4. Glass and fibre properties (optical, mechanical ...); corrosion; applications; new glasses

Comparison of physical properties of ZrF_4-and HfF_4-based melts and glasses
W.C. Hasz, J.H. Whang and C.T. Moynihan 127
Optical properties of Cr^{3+} in thin film lead-based fluoride glass
R. Balda, J. Fernández, B. Boulard and C. Jacoboni 133
Time-resolved spectroscopy of Ni-doped fluorozirconate glasses
M.A. Buñuel, R. Alcalá and R. Cases 137
Fluoride enamels for aluminium
M. Saad, M. Poulain and M. El Farissi 141
Anomalous light scattering in the glass transition region
C.T. Moynihan and J. Schroeder 148
Viscosity and density of molten barium zirconate and related melts
T. Grande, H.A. Øye and S. Julsrud 152
Light scattering in halide glasses at high temperatures: anomalous scattering and nanoscale inhomogeneities
J. Schroeder, M.A. Whitmore, M.R. Silvestri, S.K. Saha and C.T. Moynihan 157

BIG fluoride glass optical fibers with improved NA
N. Rigout, J.L. Adam and J. Lucas 161
Mechanical properties of ZBLAN glasses
A. Delben, Y. Messaddeq, M.D. Caridade, M.A. Aegerter and J.A. Eiras 165
Characterization of fluoride glasses for single-mode optical fibers with large refractive index difference
T. Kogo, M. Onishi, H. Kanamori and H. Yokota 169
Inelastic light scattering in halide glasses at high temperatures: boson peaks and the degree of disorder
J. Schroeder, S.K. Saha, M.R. Silvestri, M. Lee and C.T. Moynihan 173
Oxidation states of transition metals in ZBLAN
S. Aasland, T. Grande and S. Julsrud 177
Systematic study of refractive index variations with composition in heavy metal fluoride glasses
D.R. MacFarlane, P.J. Newman, Z. Zhou and J. Javorniczky 182
Hydrochloric acid corrosion of ZBLAN fluoride glasses
J. Guery, C. Guery, Y. Gao and C. Jacoboni 188
Effect of some refractive index modifiers on both numerical aperture and mechanical strength of fluorozirconate fibres
H. Poignant, J. Le Mellot, A. Levé, P. Le Cabec and D. Rivière 192
Refractive index measurement of the TeX glasses
H.L. Ma, X.H. Zhang, J. Lucas, R. Iizuka, T. Yamagishi and T. Yamashita 198
Cadmium-containing fluoride glasses
M. Poulain and M. Poulain 202
New fluorogallate glasses
A. Soufiane and M. Poulain 206
New fluoroindate glass compositions
Y. Messaddeq, A. Delben, M. Boscolo, M.A. Aegerter, A. Soufiane and M. Poulain 210
New glass compositions containing alkali metal derived from BIGaZYbT
C. Charron, G. Fonteneau and J. Lucas 213
Systematic substitutions in ZBLA and ZBLAN glasses
R. Lebullenger, S. Benjaballah, C. Le Deit and M. Poulain 217

Section 5. Rare-earth-doped glasses and fibres; optical fibre amplifiers; spectroscopy

Holmium in ZBLAN: interplay of lasing, co-lasing and excited-state absorption
J.Y. Allain, M. Le Flohic, M. Monerie and H. Poignant 222
Red, green and blue upconversions in erbium-doped fluorozirconate glass
S.C. Goh 227
Non-destructive concentration measurements of rare earth ions in doped glasses
A. Bulou, A. Coudreuse, M. Fornoni, M. Rousseau, A. Fornier and H. Poignant 231
Upconversion in neodymium doped fluoride glasses
A.T. Stanley, E.A. Harris, T.M. Searle and J.M. Parker 235
Upconversion and relaxation of high lying states in rare-earth-doped ZBLAN bulk and fibers
B. Jacquier, A. Remillieux, M.F. Joubert, P. Christensen and H. Poignant 241
Luminescence thermal quenching of Nd^{3+} doped fluoride BIGaZYTZr glass
E. Macho, R. Balda, M.J. Elejalde, J. Fernández and J.L. Adam 245
Amplified spontaneous emission in Ho^{3+} doped ZBLA fibres
A. Saissy, B. Dussardier, E. Maurice, G. Monnom, D. Ostrowsky and N. Pikhtin 249

Spectral hole-burning of Nd^{3+}-doped heavy metal fluoride glasses
R.M. Macfarlane and B. Jacquier 254
Improved fluoride glasses for 1.3 μm optical amplifiers
R.S. Deol, D.W. Hewak, S. Jordery, A. Jha, M. Poulain, M.D. Baró and D.N. Payne 257
Rare earth-doped, high NA fluoride fibre amplifiers
S.T. Davey, D. Szebesta, J.R. Williams, T. Whitley and R. Wyatt 262
Efficient Er^{3+}-doped fluorozirconate fibre amplifier
H. Ibrahim, D. Ronarc'h, M. Guibert, H. Poignant, L. Rivoallan and J.F. Bayon 266
High-efficiency ytterbium-doped fluoride fibre laser
J.Y. Allain, M. Monerie, H. Poignant and T. Georges 270
Efficient amplification in the first telecommunications window
R.D.T. Lauder, J.N. Carter, D.C. Hanna, A.C. Tropper, H.M. Pask, S.T. Davey and D. Szebesta 274
Optical properties of pure, Nd^{3+}-doped and Pr^{3+}-doped fluoroindate glasses
C.X. Cardoso, Y. Messaddeq, L.A.O. Nunes and M.A. Aegerter 277
The fluorescence line narrowing of Sm^{3+} in ZBLAN fluoride glass
F. Gan and Y. Chen 282
U^{3+}-doped bulk and fibre fluoride glasses
J. Lambard and H. Poignant 286
Erbium–praseodymium co-doped 2.7 μm fluoride amplifier
H. Ibrahim, D. Ronarc'h, M. Guibert, H. Poignant and J.Y. Allain 290
Cross-relaxation for Tm^{3+} ions in indium-based glasses
I.R. Martín, V.D. Rodríguez, R. Alcalá and R. Cases 294

Section 6. Chalco–chlorohalide–TeX glasses; chalcogenides; miscellaneous

'High T_g' germanium–tellurium–halide glasses
P. Klaska, X.H. Zhang and J. Lucas 297
Extrinsic scattering losses in As_2S_3 glasses
D. Ležal, K. Koňák, S. Poláková and B. Petrovská 301
Phase separation and crystallization of chalcogenide glass-forming systems
Cheng Jijian 304
New IR transmitting $40HgS–40PbBr_2–20PbI_2$-based glasses
E. Harfmann, J.J. Videau, J. Portier and B. Tanguy 309
Mechanical properties of several TeXAs glasses
A. Becke, R. Reimann, G.H. Frischat, H.L. Ma, C. Blanchetière, X.H. Zhang and J. Lucas . . . 313
New chalcohalide glasses from the system $GeS_2–Ga_2S_3–MnCl_2$
B. Petrová, M. Frumar, E. Černošková and V. Černý 316
Measurement of bulk absorption coefficients of chalcogenide and chalcohalide glasses at 10.6 μm using CO_2 laser calorimetry
J.S. Sanghera, V.Q. Nguyen, R. Miklos and I.D. Aggarwal 320
Thermal characterisation of infrared-transmitting Ge–S–I glasses
A.B. Seddon and M.A. Hemingway 323
Low loss optical fibres of the tellurium halide-based glasses, the TeX glasses
X.H. Zhang, H.L. Ma, C. Blanchetière and J. Lucas 327
An ESR study of pure and vanadium-doped Ge_xS_{100-x} glasses
E. Černošková, Z. Černošek and M. Frumar 331

Author index 335
Subject index 340